

shining, the more recent whorls perhaps a little more rapidly increasing in size than the first three or four, the apex acute with the embryonic whorls two in number and very minute, the next three small and simple, the five succeeding similar to the preceding three except in possessing, at each side, a large obtuse aliform process as shown in the figure. Umbilicus rimate. Inner lip defined throughout by callus, which is slightly reflected along the umbilicus. Surface of all the whorls feebly and evenly convex, the suture fine and simple but distinct. Length 3.5 mm.



Lower Claiborne Eocene (St. Maurice, La.)

The outer lip is broken away in the unique type, but undoubtedly possessed an aliform projection similar to that immediately above it. The processes are of the nature of thin varices which served to protect the animal, and the growth of the shell between these temporary arrests was probably very rapid.

THREE NEW SPECIES OF CHROMODORIS.

BY T. D. A. COCKERELL.

The species here described are obviously different from *C. californiensis*, Bergh, and *C. agassizii*, Bergh, and I do not find any descriptions applicable to them.

CHROMODORIS UNIVERSITATIS, n. sp. Length about 67 mm., rather narrow, mantle less ample than in *C. mcfarlandi*, not expanded at the sides; rhinophores and branchiæ wholly retractile; rhinophores stout, with numerous transverse lamellæ; branchiæ of about 12 large simply pinnate plumes, several more or less branched, and so bipinnate at the ends; oral tentacles just concealed by mantle; hind end of mantle gibbous; foot projecting 20 mm. behind end of mantle; breadth of sole when crawling $8\frac{1}{2}$ mm.

Color rich dark ultramarine blue, the edge of the mantle and the edge of the foot bright cobalt blue; rhinophores very dark blue; mantle with two longitudinal series of oblong very bright orange spots, about seven in a series; five round orange spots on the anterior part of the mantle, in front of the rhinophores; under surface of posterior lobe of mantle with a series of eight round white spots, the

hindmost four large, the others smaller and rather faint; sides of foot with a series of over ten round or oval orange spots; branchiæ very dark blue, speckled with orange within; sole deep blue.

The splendid blue pigment of this animal is dissolved out after death, even in sea-water; but very fast in formalin, producing a blue liquid which is turned pink by hydrochloric acid, but is not affected by alkalies, except that strong alkalies rapidly bleach it. Curiously, the orange spots of the animal seen through the blue solution, appear red, though in reality their color is not altered.

Hab.—In rocky pools between tides, San Pedro, Calif., July 28th, and La Jolla, Cal., early in August, all collected by Wilmatte P. Cockerell. The name of the species was suggested by the fact that it carries the colors (blue and gold) of the University of California. It was also collected at San Pedro by the naturalists of the University of California Marine Laboratory.

CHROMODORIS PORTERÆ, n. sp. Length about 11 mm., form of *C. universitatis*, but uniformly much smaller, and quite different in markings. Deep ultramarine blue, including the whole of the foot; mantle with two rather broad longitudinal stripes of bright orange, not united posteriorly, and ending anteriorly at the rhinophores, but anterior to the rhinophores is a transverse orange stripe; median stripe of *C. mcfarlandi* represented by an inconspicuous lighter blue line; margins of mantle very narrowly pure white; foot wholly without marks, except that the hind end has a suffused whitish stripe. Rhinophores and branchiæ entirely retractile. Branchial plumes eleven, in a circle, simply pinnate, entirely of the blue color of the mantle. After death, a number of conical white papillæ (about 9 on each side) appear beneath the hind part of mantle. After death, the blue dissolves out, and the body becomes a sort of pale greenish-blue, with the dorsal stripe very white; and the orange bands as in life.

Hab.—In rocky pools at low tide, La Jolla, Cal., early in August, rather common. (Wilmatte Porter Cockerell.)

CHROMODORIS MCFARLANDI, n. sp. Length about 35 mm.; mantle ample, covering head, but pointed end of foot projecting far beyond mantle posteriorly; rhinophores short and stout, lamellate, with over twenty transverse lamellæ; branchiæ entirely retractile, arranged in the shape of a horseshoe, not entirely surrounding the anus, which is produced into a truncate cone; branchial plumes.

twelve, simply pinnate, some of the posterior plumes bifid; oral tentacles short, wholly concealed under mantle; eyes apparently absent. Mantle brilliant purple with a yellow margin (continuous in front and behind), and three longitudinal yellow stripes; the yellow of the margin is really bright orange, bordered with white; the median yellow stripe begins a short distance before the rhinophores, and runs between them; rhinophores dark purple; foot white with a purple tint, or quite purple when contracted after death; the end of the foot is purple with a dorsal longitudinal orange stripe. The purple color does not dissolve out in formalin.

Hab.—In rocky pools at low tide, La Jolla, Cal., beginning of August; San Pedro, Cal., July 27th. All collected by Wilmatte P. Cockerell. Quite common at La Jolla. Named after Prof. F. M. McFarland of Stanford University, who has done some excellent work on the nudibranchs of Pacific Grove, Calif.

NEW LAND SHELLS OF THE JAPANESE EMPIRE.

BY HENRY A. PILSBRY.

Chloritis bracteatus n. sp.

Shell depressed-globose, almost imperforate, very thin and fragile, brown. Surface dull to the eye, under a strong lens seen to be very densely covered with very small crescentic scale-like cuticular processes, densely crowded, and arranged in nearly regular descending rows. Spire convex. Whorls $4\frac{1}{2}$, the inner slowly, the last rapidly widening; separated by a deep suture. Aperture rounded, lunate, the peristome simple and thin, at the columellar insertion abruptly dilated, almost closing the umbilicus. Alt. $13\frac{1}{2}$, diam. 18 mm.

Nishigo, Uzen. Types no. —. A. N. S. P., from no. 904 of Mr. Hirase's collection.

This most northern of all its genus is strongly distinct by its excessively minute, curved cuticular appendages, unlike the hairs of all other species of *Chloritis*.

Pupisoma japonicum n. sp.

Shell globose-turbinata, umbilicate, light brown, very delicate and fragile. Surface delicately striatulate. Spire conic, the apex obtuse. Whorls $3\frac{1}{2}$, strongly convex. Aperture very obliquely ovate,